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ABSTRACT

Much of what we know about the natural resources of developed countries can be found in libraries or on the internet. However, in lesser-developed countries, most of this knowledge exists only in the minds of experienced and skilled men and women. Together with 32 Melanesians we have assembled a 128 page illustrated book titled *Aquatic Knowledge and Fishing Practices in Melanesia*. The 30 essays recording traditional fishing customs were written by students of the Papua New Guinea (PNG) University of Technology, University of the South Pacific and the University of PNG. The essays were written after students had spoken with village elders and participated in fishing activities. Caribbean fishers also have an important body of fisheries knowledge that is largely unrecorded and under appreciated. Young, educated students in the Caribbean are among those citizens who know least about such things. Many spend their learning years away from fishing communities both physically and socially. They are seldom taught to understand and respect these knowledge systems and customs. Paradoxically, these are the citizens who will be given the duties and responsibilities to determine the future conservation and development strategies for their countries. It is unlikely that their training can be fully applied without greater fundamental knowledge of local marine resources. Many of these countries do not have the financial resources or human capacity required to conduct scientific surveys necessary to obtain information known by local fishers. I urge universities, NGOs, government agencies, and others to establish a coordinated program where young, educated Caribbean scholars work within their communities to establish partnerships with local fishing groups and document this knowledge while respecting intellectual property values.

KEY WORDS: Marine education, Caribbean, Melanesia

El Valor de Documentar las Prácticas de Pesca y el Conocimiento Acuático de los Pescadores Locales

Se dice que gran parte de lo que se conoce sobre los recursos naturales de los países desarrollados se puede encontrar en librerías o en el Internet. Sin embargo, en los países menos desarrollados, este conocimiento solo existe en la mente de los hombres y mujeres con destrezas y experiencia. Junto a 32 Melanesios, hemos ensamblado un libro ilustrado de 124 páginas titulado "*Aquatic Knowledge and Fishing Practices in Melanesia*" (Conocimiento

Acuático y Prácticas de Pesca en Melanesia). Estos 30 ensayos que recopilan costumbres tradicionales de pesca han sido escritos por estudiantes de la Universidad de Tecnología de Papua Nueva Guinea (PNG, por sus siglas en inglés), la Universidad del Pacífico Sur, y la Universidad de PNG. Los ensayos fueron escritos luego de que los estudiantes conversaran con personas de edad avanzada de la aldea y participaran en actividades de pesca. Los pescadores Caribenos poseen una importante cantidad de información acuática la cual muy pocas veces es apreciada y recopilada. Esta representa un recurso vital de información del tiempo en el que la gente aceptaba la autoridad de la naturaleza y aprendían por medio de la experimentación, sus errores, y observación. Podemos encontrar estudiantes Caribenos jóvenes con educación entre los ciudadanos que menos conocimiento tienen sobre estos asuntos. Muchos de ellos pasan sus años de estudio lejos de las comunidades pesqueras física y socialmente. Apenas se les enseña a entender y a respetar este conocimiento del sistema y las costumbres. Paradójicamente estos son los ciudadanos que tienen la misión y la responsabilidad de determinar los medios de conservación para el futuro y desarrollar estrategias para sus comunidades. Es poco probable que puedan aplicar plenamente sus conocimientos si no tienen un conocimiento fundamental de los recursos marinos locales. La mayoría de estos países no tienen los recursos financieros ni la capacidad de personal necesaria para conducir los estudios científicos necesarios para obtener la información que pueden ofrecer los pescadores locales. Yo exhorto a las universidades, a las organizaciones no gubernamentales, a las agencias de gobierno y al público en general a establecer un programa coordinado en el cual los estudiantes jóvenes del Caribe trabajen en sus comunidades para establecer una asociación con los grupos de pescadores locales para documentar esta fuente de información y conocimiento respetando sus propios valores intelectuales.

PALABRAS CLAVES: Marine education, Caribbean, Melanesia

INTRODUCTION

Much of what we know about the natural resources of developed countries can be found in libraries and accessed on the internet. However, in Melanesia and much of the Caribbean, knowledge about many fishing practices exists only in the minds of experienced and skilled fishers.

Over the ages, Melanesian societies have developed innumerable marine technologies and sciences. They have devised ways to navigate vast distances in the Pacific using their knowledge of currents and the feel of intermittent waves that bounce off distant islands, as well as acquiring an understanding of the ecology of marine resources. Much of the traditional aquatic knowledge in Melanesia is undocumented and represents each society's lifeline to a time when people accepted nature's authority and learned through trial, error and observation. Anthropologists who first explored the societies of the Pacific were more interested in kinship relations than what has sustained this coastal community for generations (Firth 1963).

Much of this knowledge is dying out or being absorbed into modern

civilization. As they vanish, so does their irreplaceable knowledge. Fibreglass boats are replacing dugout canoes. With this change goes the knowledge about which are the best trees to use, when and how to cut them. The use of outboard motors is replacing the sail and with it the knowledge of the winds currents that assisted the vessels powered by natural forces.

If this knowledge had to be duplicated from scratch by scientific resources of more developed countries, it would require lots of money and take many trained scientists a long time. Much of this local expertise and Melanesian wisdom has already disappeared, and if neglected, most of the remainder could be gone within the next generation.

Together with 32 Melanesian nationals we have assembled a 128 page illustrated collection of essays titled *Aquatic Knowledge and Fishing Practices in Melanesia (AKFPM)*. The book is based on manuscripts written by students at the Papua New Guinea (PNG) University of Technology, Lae; the University of PNG, Port Moresby; and the University of the South Pacific (USP), Fiji. The essays were written after they had spoken with village elders and in some cases participated in fishing activities. The book is an important first effort to involve indigenous citizens in the documentation and review of their culture and traditions.

DOCUMENTING MELANESIAN FISHERIES KNOWLEDGE

Young, formally educated students are among those citizens who know least about village customs and knowledge. Their learning years are spent far from their ancestral villages and they are seldom taught to understand and respect these knowledge systems and customs. Paradoxically, these are the citizens who will be given the duties and responsibilities to determine the future conservation and development strategies for their country. It is unlikely that their socio-economic and technological sophistication can be fully applied without the fundamental knowledge that their culture possesses of the surrounding natural resources.

The shorter published essays were selected from > 100 students' essays written for various courses I taught at several universities in the South Pacific between 1980 and 2000. The longer essays were specifically written by students for this project. Discussions about the value of local knowledge and resource management were conducted and students were given relevant material to read and later discuss.

The initial approach in the village was to develop a list using local names of marine organisms. Several books were used, but more frequently used was *The Fishes of New Guinea* (Munro 1967). The knowledge was not monolithic. At times when I participated I observed arguments over local names of fish species. Perhaps it was an argument over the drawing in the book and not the actual name of the fish.

The essays were edited and shortened. Changing vocabulary and shortening sentences without altering meaning is difficult. If meanings have changed it is entirely my fault. Wherever possible, the essays have been read for accuracy by other people from the area. However, the information has not been subjected to verification which is an important step in legitimizing the

information and removing inconsistencies. As well, linguistic analysis would assist in determining if the local taxonomies correctly reflect scientific taxonomies (Ruddle 1994).

AKFPM has been written for two different readership groups. The first group contains short, illustrated essays, without Latin names of the biota and without citation designed to meet the needs of a secondary school system lacking local material suitably written for Melanesian youth. The second group of essays is longer with more detail and is written for a more educated readership. All of the essays offer various levels of insight into the communities and make interesting reading.

AKFPM contains not only essays about Melanesian societies who have long used the sea (Daudau and Quinn 2004), but also an essay about a Melanesian society that transitioned after World War II from upland, interior society based on tribal warfare and cannibalism to a society living on the coast, learning to utilize for the first time marine resources (Arnhambat and Quinn 2004).

Other *AKFPM* essays deal with Polynesian enclaves in Melanesia. Although Rotuma is politically part of the Republic of Fiji and 550 km from the capital Suva, it is ethnically Polynesian. Because of its remoteness and the migration of young Rotumans to find work and diversion away from Rotuma, the island's fisheries resources are free of pollution and still abundant (Fui and Naqasima-Sobey 2004).

Not all of the information deals with sustenance. The chewing of betel nut is a common social practice in regions of Melanesia where *kava* (*Piper methysticum*) is not consumed and religious practices do not presently prohibit it. Many Papua New Guineans and Solomon Islanders chew. The effect relaxes and relieves anxiety and hunger pains among other social purposes. However, in order for the effect to occur lime must be added (Mahoney et al. 1985). The source for the lime is the corals and mollusks shells of the coral reefs and coastal mangroves where it is collected, processed and sold by women (Quinn 1985).

Although the book is about local knowledge we have deliberately decided to minimize the knowledge based on spiritual belief systems or legends included in the book. Spirit (*masalai*) belief is one of the traditional concepts still commanding widespread respect, even among many educated people. *Masalai* are considered to protect resources in an environment in which humans are considered to be an intruder. The invocation of powers of a *masalai* over a resource are effective as a management tool in that the area or species is avoided for fear of sickness or death that is believed to be the result of displeasing the *masalai* (Wright 1985).

In reading the *AKFPM* essays the reader will recognize similarities among the descriptions of knowledge in the essays. The information is based on long-term, empirical, local observations that are practical and focus on valuable species. The knowledge base is also dynamic and open to accepting new technologies or concepts and is indicative of peoples who have an acute level of environment awareness.

INTELLECTUAL PROPERTY ISSUES

While the students were encouraged to document the local aquatic knowledge and were given recognition for writing up this knowledge, it is recognized that the authors are not the repository of the body of knowledge, but rather the messenger. The ownership of the knowledge belonged collectively to the people and their proprietary rights are respected.

Information deemed to have commercial implications was removed from the essays. For example, the knowledge about spawning aggregations could be used by commercial fishing operations to overexploit the resource and either harm the community's sustenance or diminish its ability to sustainably exploit the resource commercially in the future. While in the Caribbean the collection of this information from Cuban fishers is being applied in the design of marine reserve networks (Claro and Lindeman 2003), the potential for abuse in the Pacific is greater.

The preservation of these intellectual property rights (IPR) are considered to be vital to the conservation and sustainable use of biodiversity. In western society this demarcation is clearer because western IPR systems are based on private rights and only recognize collectively held knowledge if the 'community' is a company (Downes et al 1999).

THE NEED FOR LOCAL FISHING KNOWLEDGE IN THE CARIBBEAN

It is undoubtedly altruistic and naïve to think that artisanal knowledge by itself will provide a model for development of marine resources. Whatever a society's aspirations, a localized worldview and locally developed assertions about how to best manage fisheries still arise among fishing peoples at every level of technological sophistication. It is necessary to document the local knowledge to help improve the understanding of these societies if fisheries management is to be more effective in the future.

Caribbean educational institutes have a responsibility to help retain such knowledge and transmit it to future generations. However, without printed material for the teachers and students to use, it is excluded from the curricula. The exclusion amounts, unintentionally, to a tacit assertion that it is no longer worth learning. *AKFPM* is making an important contribution to fill this void in Melanesia as the book will be used by the PNG Education Department in secondary schools and in universities throughout Melanesia. But what is being done in the Caribbean?

Although there have been many publications describing the fish fauna of the region, there have been only a few efforts to document the wealth of marine knowledge and the diverse fishing practices of the Caribbean, and there is nothing written for Caribbean school children. The deeply disturbing news from the Jamaican Ministry of Education is that barely over ½ of the 10 year olds currently in school have mastered word recognition, reading, and comprehension. For teachers to motivate and stimulate students to learn to read they need good books dealing with subject matter of local interest and relevance.

The Jamaican Minister of Education said that she was going to address the problem by "putting in place in schools a new curriculum" and "new support

materials” to combat the illiteracy problem. I suggest a book documenting Caribbean wide aquatic knowledge and fishing practices might help to stimulate young students to want to read and better understand the local marine world. This then might contribute to increasing the body politics’ concern for implementing effective management practices and to credibly enforce them.

I urge universities, NGOs, government agencies, and others to establish a coordinated program where young, educated Caribbean scholars work within their communities to establish partnerships with local fishing groups and document local aquatic knowledge while respecting intellectual property values. The essays could be written by tertiary level students throughout the Caribbean either as part of a course or as paid summer employment. Having tertiary level students seek the knowledge of local fishers is a dramatic change from the current approach which dismisses local fishing knowledge. It is important to recognize that communities be participants in the management process. With a respect built upon an understanding of artisanal fisheries managers would be in a better position to make management decisions in a partnership with fishers.

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